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OF

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FOR

RECORDING FACTS AND ANECDOTES

RELATING TO

QUADRUPEDS, BIRDS, REPTILES, FISHES AND INSECTS.

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DICTIONARY

OF

BRITISH BIRDS.

☞ *In order that there may be no misapprehension about the character of the work, a sheet is stitched up with the present number of the 'Zoologist.'*

THIS LABORIOUS WORK, after having occupied me almost incessantly for fifteen months, is now nearly complete, and will be published in a few weeks, price TWELVE SHILLINGS; but gentlemen sending a prepayment of TEN Shillings to this Office before the 1st of July will receive a copy, carefully packed, *carriage free*, in any part of the United Kingdom. Prepayment may be made either in Postage Stamps or by Post-Office Order; if the latter it must be made payable at the Money-Order Office, Bishopsgate *Within*. The subjoined extract from the Preface will explain the character of the work:—

1. The whole of Colonel Montagu's 'Dictionary,' 'Supplement' and 'Appendix' are reprinted in a combined and alphabetical order, the words SUPPLEMENT and APPENDIX being prefixed to whatever is derived from these two sources. Nothing that Montagu has published is omitted or altered.

2. In no instance have I overlaid the original with my own notes and observations, or attempted to controvert the author's assertions because at variance with my own more limited experience; nevertheless in some few instances where subsequent writers have concurred in considering Montagu's descriptions to designate states of plumage rather than specific differences, I have added a note to that effect, thus:—[Solitary Thrush. This bird, thus carefully and minutely described, is now universally regarded as the young of the Common Starling].

[*Continued on 3rd page of Wrapper*

Notes from New Granada. By HENRY BIRCHALL, Esq.[*]

The Tropical Forest.—You seem to fancy it fine to have eternal summer: if by that you mean continual heat, but no freshness, you are welcome. The unpleasant part of tropical climates, such as we have here, is that there is never anything to correspond with the growth of seasons out of each other. It is all like those horrid dry trees we used to have in the toy farm-yards,—with sheep and other beasts,—always green, but never giving a notion of fresh-growing of spring nor summer fullness either, much less of autumn ripeness. Perhaps it is better than Bradford smoke; but then one hour thence brings you upon Rumbald's Moor and down into Wharfedale. I went on a tour of exploration lately: should like you to have seen my clothes and my legs after some days' tramping in the "gorgeous and ever-green magnificence of a tropical forest," which, being interpreted, signifies the rotten, fœtid, slimy, tenacious, black mud of a thousand years' decay, mingled with the twisted roots of living—and the sharp sticks, thorns and fragments of dead —vegetation of every botanical family under-foot, with a tangled mass overhead like the contents of a gardener's pruning-basket and a woman's sewing-silk bag, mixed together with thorn-bearing stems, set conveniently wherever you are likely to make a false step and catch at the nearest support. Your tropical forest is one of the biggest impostors ever helped into success by poets worthy of Moses or of Warren. The food of the scanty population appears to consist of monkeys, which I saw, opened and trussed, hanging with squirrels, toucans and peccary pigs. I resisted the temptation to cannibalism, until I shall have seen whether Owen or Huxley gets the best of the argument. If the former, it will do to eat freely of what the latter would regard as a prohibited meal to the whole anthropoid race. The absence of life in the forest is very extraordinary. You walk for hours and do not see or hear a living thing bigger than a bee or a tomtit. I cannot make it out at all: in the four days scarce saw a butterfly; a few squirrels and common birds only; but my business was under-ground chiefly. The country up there—say 1000 to 1500 feet higher than this, perhaps 4000 or 4500 above sea-level—is honey-combed with the workings of the Spaniards. We went into mine after mine within a few hundred yards, some of great extent—I cannot make out when or why abandoned. But the forest has reasserted its

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[*] Communicated by his brother, Edwin Birchall, Esq.

BRITISH MUSEUM

dominion, and the bottoms of the ravines are choked deep with fallen trees, the indescribable tangle that grows everywhere binding it all into a mass of leafy, thorny confusion, that must be seen and felt and pushed through with aid of hatchet to be appreciated. In one place I had a big tree, seventy or eighty feet high, felled to get at a bees' nest. The crash of this huge fellow down the hill-side into the bottom was worth seeing and hearing. There was plenty of honey, but nasty and and acidulous to my taste, of a small orange-coloured bee, very vicious, whose venom appeared to lie in his jaws, not his tail; bites like mad and raises sore blisters. Did not do anything to me; I keep out of the way in such cases. Talking of stings, I have got two or three so-called "tiger ants" for you—are as big as a large wasp, black with large spots and stripes of cream-colour; have a dreadful sting, just like a wasp's, which generally produces fever: not uncommon about my house at times.

Agriculture of New Granada.—I have nothing new to read at present: I am waiting for Lyell on Adam, and want to see your review thereof. The principal matters of interest in the English papers seem to be the American war; the war against sparrows, tomtits and company; the attack on those who see no harm in plucking ears of corn on the Sabbath day; the distance of the sun from the earth; the proximate shut-up of the coal trade by the exhaustion of its article; and the weary quarrel about iron ships and heavy guns. The tomtit question seems the most interesting: I have no doubt the birds do eat a power of fruit, as they have nothing else to do in July and August; but what they do not eat would also be eaten if they did not walk into the caterpillars in the spring. One gentleman says they worried his gooseberries when lots of caterpillars were on them: no doubt, and so would anybody not an Annamite ambassador, who, I see, considered pickled grubs their greatest delicacy, and very nice too. If men will set up gardens among woods what can they expect? Here if you go in for backwood-clearings, your maize is no sooner in ear, green and delicious, than down come the monkeys, each carrying off six ears with ease in this manner—one in each hand, one in his mouth, one under each arm and one under his tail! When the monkeys have walked off, a herd of cajuches and peccary pigs (or peccant pigs, more properly) arrive to grub all up, in order to bring down the crop to their snouts. Kill one, and the rest will soon persuade you that a tree is good lodgings. The pigs off, the parrots drop in by hundreds, and make a neat job of their share of it. Other birds are always at it, in spite of monkeys, pigs and parrots, and in the meantime it is more than probable there would be nothing to begin with for aforesaid agriculturists, the whole business having probably been settled, before the crop got an inch high, by beetle-larvæ of the most destructive capacity and propensities in proportion to their magnitude. At which end, I wonder, would you begin in this case; and whilst you are considering or writing to the 'Times' the wild vegetation would grow fifteen or twenty feet high all over, and you might begin the clearing again, in order to watch the interesting process, and make up your mind which was most culpable, larvæ, parrots, pigs, monkeys, or feathered fowl in general.

Origin of Species.—Pray send me a report of the feathered reptile. How does he jump with Darwin's hypothesis, and was he going in for crocodile or eagle when the catastrophe overtook him? The discovery of him illustrates one of Darwin's points, that we see only a small bit of the animated existence of ancient times; at any rate, finding him, we may next come on the one who exchanged his fore legs for wings, or *vice versâ,* if that was the way of it. I have been reading the Du Chaillu quarrel in the 'Athenæum' of September, October, &c., 1861. Truly he comes rather queer out of it. At Hondu I saw Du Chaillu's book. It does not attract me much; I so abhor African names, and to read a discredited traveller is not very satisfactory. Waterton settles the story of the gorilla fighting like Tom Sayers, which never was credible to any one who considered his wretched legs and monstrous paunch in the British Museum. Huxley appears determined on having his own pedigree cleared up: he no doubt says politely to Owen, "My pedigree, sir, begins where yours ends," as the old Joe Miller has it. I cannot quite see my own way to that doctrine of ape ancestors, I confess, and yet, if we may be descended from Digger Indians, the other is conceivable. The grand point lies in the true nature of the distinction between reason and instinct; that is, do they differ, except in degree? I never have seen this fairly dealt with. As for degradation and all that, there is nothing in it. If the Creator has so ordained that out of lower shall spring higher orders of being, I see no reason why we should complain, but the contrary. That the whole universe is the result of what we call the "law of orderly succession of phenomena," in accordance with the original conception of the Divine Being who is the mover and sustainer as well as the Author of Creation, appears to me the only possible conception. I can see no way of dragging in what is called an act of creation without upsetting the whole universe. Certain powers, forces, or what you will, being once set in action according to immutable sequence, all the phenomena of creation follow in due time: nothing more is wanted. No doubt people prefer the old notion, which gives us more importance.

HENRY BIRCHALL.

A short Description of an Acarus and its Agamic Reproduction.[*]

By RICHARD BECK.

(Reprinted from the 'Quarterly Journal of Microscopical Science' for April, 1866.)[†]

AFTER keeping one or two species of Acarus for a very considerable time, and having no difficulty in increasing or diminishing their number according to the treatment I pursued, it was much to my surprise when about the middle of last summer they began rapidly to disappear, and in a comparatively short time I was quite unable to obtain from the whole of my stocks any living specimens.

On one occasion, when making a general search to see whether the Acari had merely moved their quarters, I found in the thread of a spider's old cocoon a species of Acarus, so entirely different from those I was looking for, and presenting to me such novelty in appearance, that I lost no time in carefully securing this and one other specimen, which were all I could find: one of these, however, was injured in its capture, and died immediately.

The general appearance of the one still left was that of a female, but without a male I thought there would be no chance of obtaining any reproduction of its species, and I had moreover no clue to the food it required. Instead, however, of following the often too hastily adopted plan of merely making a mounted preparation of my specimen, I determined to preserve its life as long as possible, and I am now not only enabled to prepare a specimen whenever I like, but also to supply some facts as to its life-history which could only have been obtained by keeping it for some considerable time in a living state.

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[*] Since reading this paper Mr. Bockett has shown me a specimen of the same Acarus, mounted by J. Bourgoine, of Paris, which he names "Cheyletus des pilleteries (rare)."

[†] [I have thought it desirable to reproduce this important paper in a Zoological Magazine, because its interest is general, and extends beyond the limited circle of microscopists. Agamogenosis, in all probability, exists in nature to a far greater extent than has yet been supposed. The observation by Professor Huxley, quoted by Mr. Beck from the Linnean 'Transactions,' shows how great is the necessity to avoid drawing any conclusions from the absence of evidence. The production of evidence leads to positive inferences, but its absence is only valuable as illustrating the paucity of observers on the insufficiency of their observations.—*Edward Newman.*]

The question of food puzzled me for some time, as I naturally confined myself to obtaining supplies from the locality where I found the Acarus, but a part of the cocoon, the eggs of a spider, and their first cast skins, were all alike refused. It was only as a last resource and judging from the remarkable size of its falces, together with its peculiar movements, that I gave it some living Acari of a different species; these I soon saw were quickly seized—the disappearance of my colonies of Acari which I have mentioned was at once explained, and I continued to supply my new specimen with food, hoping it would turn out to be an impregnated female.

In a few days it laid some eggs, and these duly hatched, and many subsequent generations have been produced by them. I am now able to supply the following facts connected with this Acarus, which I believe are new.

The eggs, as compared with those laid by other species of Acari with which I am acquainted, are rather small in proportion to the parent; they are of a bluish white colour, transparent, and adhere to the substance they are laid upon by a short thread at one extremity. At the age of two or three days in summer time, the young may easily be detected inside the egg, which hatches, according to my memoranda, in five, six, or seven days from the time it was laid; the variation in this and other periods of development being due, I believe, in great measure to the temperature of the atmosphere.

The young as it comes from the egg has only six legs; it is white, perfectly transparent, and very active, wandering about in every direction. At the age of seven days it casts a skin, and then acquires eight legs; at a further interval of seven or eight days it casts a second skin, and then arrives at maturity; before each of these moultings the individual remains sometimes for one or two days perfectly stationary and apparently dead; I mention this circumstance so that any one who likes to repeat these experiments may not disturb the Acarus in this important operation.

This Acarus soon after arriving at maturity assumes a yellowish green colour, and I will endeavour to describe some of its more remarkable features at this stage of its life.

That which strikes one at first sight is the size of the falces, for I presume they cannot be correctly termed mandibles; they are largely developed, apparently very powerful, and move in a horizontal direction; the two when spread out forming a complete semicircle. The free extremities of the falces are somewhat complicated in structure; on the outside edge is a strong claw, with two short spurs at its base, and immediately within this or the inner side are two combs, very similar in general appearance to the pectinated claws at the extremities of some spiders' feet; the inner one is smaller than the other, but the two move simultaneously and independently of the outer claw. There are also a few strong hairs situated near the combs.

When this Acarus seizes another one of a different species, which it does by its falces, laying hold of a leg or any other part indiscriminately, the prey, after a lapse of about fifteen or twenty seconds, becomes poisoned or paralysed, the legs bend up under the thorax, and no part of its body makes any resistance to the pulling backwards of the devourer, who, when she finds this passive condition of her prey, deliberately sucks out the fluids with an apparatus at the mouth, and does not leave it until it is entirely empty and shrunken. The poisoning process, however, does not occur when this Acarus feeds, as it frequently does, upon one of its own species. In this case the prey continues to move and show signs of life as long as any fluids appear to be left in its body, and even, when a very small one has been devoured, I have noticed a movement of the legs full half an hour from the time of its first seizure.

The parts of the mouth project from the bases of the falces and two sharp pointed and close fitting lancets, answer the double purpose of piercing and conveying the fluids, which appear to be sucked up by a muscular movement at the base of the piercers. The Acarus is sufficiently transparent for the process to be watched under the microscope, and the fluids may be distinctly traced in their passage from one acarus to the other.

The external structure of this Acarus appears to be very simple, and there are but few features to notice beside those of the head. Two rows of short hairs, about twenty in all, run in parallel lines, and a short distance apart, leaving a broad central band, underneath which a large vessel is easily detected, and appears more or less filled with white flocculent matter. In no part can I detect any spiracles or tracheæ.

Of the legs, the first pair are during life constantly raised and lowered in a vertical direction, and from this peculiar action, combined with their two unusually long terminal hairs, I presume they are employed as feelers. The last joint of each tarsus is furnished at its extremity with two hooks and two longitudinal and parallel rows of delicate tenent hairs; by the aid of these this Acarus walks with some little hesitation in an inverted position upon glass.

The anus I believe to be represented by two slightly projecting flaps at the free extremity of the abdomen, immediately below which is a longer aperture, from which I presume the egg is emitted.

Wherever this Acarus in a natural state deposits its eggs, in that part it takes up its quarters and remains for a considerable time: this is in fact necessary for the protection of its eggs, which would otherwise be devoured by Acari of the same and probably other species. They will frequently destroy their own eggs themselves when disturbed, or when pressed for food.

Having these Acari now well established in a cupboard I mostly find them partially concealed in some small cavity, and when in a mature state standing over a quantity of eggs in every stage of development; the empty egg-shells from their extreme thinness reflecting a brilliant blue light, which catches the eye more quickly than the Acarus itself.

My object from the first in securing this Acarus, and in keeping it alive was to obtain specimens of both sexes, but I have never yet been able to detect a male. I was much surprised to find that every specimen I selected laid eggs, all of which duly hatched, and to make sure whether this was really a case of agamic reproduction, I determined to isolate some individuals very carefully, and I obtained the following results. In all these experiments I have employed the "live traps" which I described in the last number of the 'Microscopical Journal of Science,' and they have answered perfectly, not only in completely isolating the specimens, but also enabling me to put them under the microscope, or to supply them with food at any time without disturbing them in the least.

On July 10th, of this year, a young Acarus of this species was taken from a trap in which there was only a mature female; it was completely isolated, and on the 29th of the same month it laid eggs, which hatched on the 4th of August. One of these on the day it was hatched was removed to a trap and also completely isolated; by the 13th of September it had laid eggs, and some had hatched. On the 19th of September two of the young from the last mentioned trap were separated and secured: these I now have living and in a mature state; neither have as yet laid eggs, but I fully expect they will do so unless the approach of colder weather retard the process of reproduction, which I think is very probable, or it may perhaps stop the increase altogether.*

The securing a succession of three generations, including some accidents, have with me extended over a period of about five months, and I am quite prepared to admit that the proof of agamic reproduction in this Acarus would have been more satisfactory if continued through a longer period, but after reading Professor Huxley's paper on the Agamic Reproduction of Aphis, in part of which he states that "in Myriapoda and Arachnida the process is not known,"† I have thought that the few facts I have just given were of sufficient value to bring before your notice.

I am, moreover, in a position now to supply a limited number of living specimens to any one who is anxious or willing to investigate the subject, and I can at any rate promise a certainty in the supply of food, for I find that they are perfectly satisfied with the common cheese-mite.

A further investigation, therefore, into this subject, only requires the expenditure of a moderate amount of time and care, and the importance of agamic reproduction may be estimated by the attention it has already received from the most scientific naturalists.

Notes on the Quadrupeds of Lanarkshire.

By EDWARD R. ALSTON, Esq.

(Continued from S. S. 160.)

Bank Vole.—Since writing my notes on this species (S. S. 9 and 159) my attention has been called to Macgillivray's 'British Quadrupeds' (vol. xvii of the 'Naturalist's Library'), from which it appears that specimens of this species from Kelso, and from Bathgate, in Linlithgowshire, had come under that gentleman's notice (p. 272). I was therefore mistaken in supposing that this vole was new to Scotland, although it has been very generally overlooked. Mr. Macgillivray well observes that "Although the habits (of our native Mammalia) cannot be so easily observed as those of birds, nor specimens of many species be readily procured in any particular district, yet they constitute a most interesting portion of our Fauna, the complete elucidation of which is yet a disideratum in our scientific literature. The bats, shrews, seals and mice, are the groups in which discoveries more probably remain to be made."—(p. 309). To this it may be added that local lists, which some of your readers might be able to supply, are much wanted to show their geographical distribution.

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* (March 16, 1866). Since writing the above, one of the specimens last referred to was killed; the other laid eggs which hatched on the 29th of December, and one of these young ones is still alive, but isolated in the same way as its predecessors. The cold of the winter has retarded the development of these Acari very considerably, and so much so as to allow the other colonies of Acari to appear again in their wonted numbers.

† Linn. Trans, vol. xxii. part 3, p. 216.

Squirrel.—I was pleased to find, in looking over the above work, that Mr. Macgillivray confirms my observation (Zool. 9482), that the squirrel does not hybernate so completely as is often supposed. He says, "When the cold weather commences it becomes less active, and often dozes for days in its retreat; but it does not become completely torpid; and I have seen it abroad in the midst of a most severe snowstorm. If the weather be comparatively mild, it exhibits its usual activity, feeding on bark and twigs."—(p. 232).

Rabbit.—These destructive little beasts have increased to a surprising extent throughout the west of Scotland within the last twenty or thirty years. Before that time they were, I believe, almost unknown in many places where they are now only kept in check by dilligent shooting and trapping. Their numbers and mode of life render their habits more easily observed than those of many other species. When the female is about to bring forth she retires to a separate burrow, which has very seldom more than one entrance; whereas the old rabbits like always to have a loop-hole for escape, often hidden by long grass and generally excavated from within, so that no heap of thrown-out earth may betray its whereabouts. Here she makes a soft and warm bed of her own fur, and when the young are born she covers over the mouth of the burrow, and visits them only by night, as may be ascertained by marking the soil heaped over the entrance. The number of young in each litter is usually five to seven, rarely nine, but I have known one instance of eleven being found. As these wild rabbits breed at very short intervals (some say as often as eight or nine times in the year), and as they come to maturity at a very early age, their rapid increase, when undisturbed, can readily be understood. On the moors many rabbits have no regular burrows, but live in runs among long and matted heather. At Cadzow there is an old oak, whose gnarled stem rises at an angle of about forty-five degrees; the hollow trunk is inhabited by a number of rabbits; they have an entrance near the root, and when hunted with ferrets they often leap from a hole two or three feet from the ground. The black and the pied varieties of this species are common enough, and I have a very pretty reddish fawn-coloured example which was shot on the moors two years ago. All these appear to be accidental varieties, and not to be owing to any admixture of tame blood, for they all occur in places far away from any rabbit-hutch. Perhaps breeding in-and-in may be one cause of variation in colour in this and other animals.

Wild White Cattle.—I regret to say that the fatal cattle plague is making sad havoc among the wild cattle at Cadzow. Of the whole number of between forty and fifty head, nineteen are already gone and others are attacked. None of the numerous "cures" can be tried, for as long as the patient is able to move he flies from his would-be nurses, and, failing that, attacks them with what strength the disease has left in him. Fortunately one bull has recovered, so that there is still a hope of the breed being preserved. It is sincerely to be hoped that this herd —a relic of the days when the wolf, the beaver, and the bear roamed through our Scottish forests—may not yet be lost.

EDWARD R. ALSTON.

205, Bath Street, Glasgow,
April 12, 1866.

Otter at Witley Park.—On the 10th of April a full-grown male otter was killed at Witley Park, the estate of Mr. Allan Chandler. The gamekeepers were out with some beagles, looking for rabbits, when the dogs discovered it under the overhanging bank of a rivulet. After an exciting chase of nearly half an hour it was killed among some bushes, by one of the keepers, who had no idea what it could be, but thought it some dangerous wild beast that would very likely kill the dogs, in which opinion he was confirmed by its formidable show of teeth. There does not appear to be any report or tradition of an otter having been before seen in this immediate neighbourhood, and the occurrence of this specimen seems remarkable, as there is not a stream for several miles which one could not easily jump across, the rivulets of these hills forming the sources of the rivers of the lower country. The rivulet in which the animal was found is, I believe, the head-water of one which falls into the sea at Littlehampton. —*Charles G. Barrett; Haslemere, Surrey, April* 19, 1866.

Pine Marten in Lincolnshire.—A remarkably fine specimen of the pine marten (*Martes Abietum*) was trapped last year by the gamekeeper in the neighbouring parish of Riley: it is the second captured in that locality. The throat and chest of the animal are cream-yellow, interspersed with a few large brown spots on the lower part of the chest. It is now stuffed in the possession of a neighbour of mine.—*John Cordeaux; Great Cotes, Ulceby, Lincolnshire, April* 30, 1866.

Letters on Ornithology. By HARRY BLAKE-KNOX, Esq.

LETTER I.—BRITISH PELICANIDÆ.

Subfamily PHALACROCORAX. Genus GRACULUS.

A Natural History of the Shag or Green Cormorant, with an Account of all its Plumages and Transformations from the Nestling to the Adult Bird.

HAVING devoted, I may say, the last six years of my life to the exclusive study of the sea-birds in their native haunts, as well during stormy winters as sunny summers, and having noted many of their habits and peculiarities, many of their changes of plumage, and most things that time devoted to the subject could teach me, I now undertake to write some letters on the sea-fowl, more particularly on the habits and plumages of those frequenting the County Dublin. The immature plumages I have made my particular study, and as many of them were never in print before, and never followed out on a continuous chain by any author, for the several years passed in immaturity by most of the sea-birds, I therefore hope that these letters may interest some, and also supply a want long felt—a truthful and accurate account of the plumages and transformations of the various water-birds, so common and yet so obscure. It is not without reluctance that I sit down to write these letters; *first*, because I am like a bird, and love the free air, and one hour's confinement to a room irritates me; *secondly*, because the result of my labours in tracing the immature plumages of the various species from one season to another, till I have connected them in a distinct chain, link by link, from the first plumage to that of the adult, may be doubted, particularly when I must contradict authors long followed as the wise men of Science, and looked up to as the settlers of every dispute, or fill up gaps in their writings, on these plumages, so glibly passed over as being "so various" or "so well known to everyone as to be needless to describe." Now these plumages are not known to everyone, and were not known to those themselves who wrote thus, as their writings show. Any author that I have read, in giving the seasonal plumages, only shows how very ignorant he was on the subject. My collection of immatures in their various stages has been visited by "professors," and they could make no hand of it, not knowing the herring gull from the lesser blackback in their younger years, and as to naming the age of a young bird it is quite a mystery to them.

These men, book and cabinet naturalists, of course, pooh! poohed! the subject, and quite agreed that the plumages were so various as to be needless to describe, devoid of all interest, or, in fact, of no consequence to know. Now the plumages of the sea-fowl are not so very various; true they are generally three years in attaining the mature dress, but then each spring and autumn brings its changes as regularly as the birth and death of the leaf, and, if birds can be procured at the desired times, link fits link without any difficulty; but many a weary month and year may be spent in search of one link, till the subject is almost thought hopeless by any but the stubborn votary of Nature, who forces Dame Fortune to give up her treasures, not the less sweet for their difficulty in attaining. That the subject is of little consequence may have two parties, one for and one against, yet I know where the true ornithologist will place himself, and will agree with me that a knowledge of a bird's immature plumage, and the time it remains immature, is of just as much consequence as a knowledge of the adult dress. The great men of Ornithology, who know the names of thousands of foreign birds (skins, perhaps I should say) may smile with their *confrères* at the humble aspirations of the British naturalist who likes to know all that he can of the habits of the birds of his native land. I would say to those who may have met, perhaps, opposition and slight on the subject, that if their lives were twice ten hundred they would have still to learn from the birds of their own dear country, and also I would tell them to try and find out little things, and never to let them be lost again if once found out, and never to despair.

I am happy in being able to say that for the last few years I have preserved many immature birds to illustrate these papers, and though I may not at the present time be able to show every change, yet in a year or two I hope to have perfect illustrations of any paper I write. Every plumage is taken from the bird in the flesh, and should I at any time have occasion to use a foreign skin I shall mention it.

Habits of the Shag.—The shag is both gregarious and solitary in autumn, winter and spring; generally gregarious in summer, many breeding in company. With the dawn, along most of our rocky coasts, the shag may be seen winging his way to some favourite rocky bottom to fish (it prefers rocks to any other bottom). In the early twilight, flying a foot above the water of a calm autumnal sea,—no sound breaking the stillness save the rippling of the water on the rugged granite coast, so incessant and ceaseless that the sound is scarce known,—the shag is like some evil spirit coming upon you from the mist, his body looming tremendous in the fog. So near will he fly at these times that the sharp hissing of his wings is clearly audible, but then, the poor fellow, how wildly he will stare, and twist his snake-like neck from side to side, when he sees you, for he dreads man's presence, and alas! rightly, too. In his hurry to turn he will throw himself upon one side nearly belly up, and then make away at right angles to his former flight, casting furtive glances over his quick beating wings. We go on a little further, and perhaps ten or more are flying in a string, about twelve yards in the air: they pass over the boat, with the feet stretched out beneath the tail, the wings beating quickly, and then sailing with a light gliding flight, for the leader proposes to fish, and gradually they fall to the water; the feet touch first and then the body falls upon it, the wings beating three or four times before closing. For some seconds they seem to rest; one then jumps out of the water and dives head foremost, the rest follow, and an incessant diving is kept up, the birds gradually and unitedly following the same direction. Nothing can be more interesting than a sight of this kind. They are now all-beneath; a few good strokes bring us into their midst: one pops up a yard from the boat, and is down as quick as up; another rises some yards distant, eyes us, dips his bill in the water, utters his call note "go away," till all have risen to the surface, and then, in an indiscriminate mass, they rise from the water, making a tremendous commotion with their wings and feet (the shag strikes the water with wings and feet for some yards before he gets fairly on the wing). One has risen after all the rest had flown, with a good sized "brame" (wrasse) in his mouth, and the poor hungry fellow will not drop it to follow his companions, but makes furious efforts to swallow it, dipping it in the water, shaking it, and bolting at it, till at last he does succeed in getting it down, and shakes his head with satisfaction. I have never known a shag to tear a fish, to hold it in the foot, or to throw it up in the air and catch it head foremost, as some describe, though I know them in nature and confinement: the fish is always bolted entire. "What a fine crest that fellow has!" says Fred; "shall we get him?" "All right." "Pull a stroke nearer." Quickly the little boat darts ahead, and the shot tears up the water all around him: still he has dived, for no grains struck him in the head or neck, or if they did were only skin wounds, and the back is never pierced except the shooter is well above the bird. An Ely's green long distance greets his next rise, but, like a bullet, hits the water worthless beyond him. He is now up for diving, and you never know, except you are an experienced sea-fowl shooter, where he will rise, as they dive to deceive you, and then turn under water. There he goes flying from the water, about a hundred yards off. I fire to make him drop, as this bird prefers seeking safety by diving rather than by flight, and I am not disappointed, for he has dropped to the water and is diving anew. (How I used once to humbug some crack shots this way, dropping, as it were, a flying shag at a thousand yards off, the whistle of the bullet being enough to make them seek safety in the water.) They, of course, will not always fall to a shot. I have seen five flying in a string, close the wings, and fall as one in the water, disappearing the instant they touched it. Another shot is fired at him, and the neck again escapes, though he is the centre of a target. He now stretches his wings, jerks his body strongly from the water, and makes away as if determined to fly this time, but I am just loaded in time—there is no deceit this time in his fall; there is begad! I have missed, and he has only dropped for safety again, and has dived. Hah! no, there is no mistake; he has risen to the surface, and that stretched-up wing * * * * Poor fellow! "What a beautiful bird, and what a grand specimen he will make!" Yes, truly no bird is more beautiful than an adult shag, with his plumage of green, velvet-black, and burnished bronze; the recurved topping on the head, the orange and black patch at base of bill, and the dark green eye. At these times I curse collections, for I know that I have taken what I should not take, and what I cannot give—life. The shag is most easily shot. That they will dive at the flash, as some assert, I have never seen: though I have shot them in Ireland, England and Scotland, I never saw one fired at that the shot did not strike round before he dived. If they did dive at the flash you must hit them as they jump out of the water to dive. This is a good excuse for bad shot. Modern authors have copied the writings of the ancients when flints were in use, and have thus given the shag credit for what he cannot do—dive before the shot from a percussion gun reaches him. It is nine o'clock and breakfast is ready, four hours of a fresh morning with a cold bath at five making one envy the banquets of the shags, but some of the luscious still kicking mackerel, will soon be hissing over the coals, and after them we will take a cruise to Lambay and Rockabill, where the shag may be seen really at home.

The breeze has freshened since morning, and under two powerful lugs we are sailing gunnel under, the white hissing spray passing in showers over the bow, and falling with a monotonous "whish" upon our oiled clothes. One of the "hands" is listlessly eyeing the seething water, the other with sheet in hand ready to ease her as the tremendous puffs from the "nor'-west" strike us. Quickly gliding over the white-fringed waves skim the brownheaded, the common and the kittiwake gulls: above our heads, and prying into the water in our wake, are the lesser blackbacked and the herring gulls, and occasionally with slow and heavy flight passes the great blackback, too wary to give a shot. The guillemot and the razorbill fly from the water or dive with expanded wings at our approach; the northern and redthroated diver quietly disappear in the briny depths. Gannets, at some distance, are plunging head foremost at the mackerell, but one coming too near falls kicking into the water, his falling bringing a great blackback within range, for curiosity will often tempt them beyond the bounds of discretion, but though we hear the shot cracking his quills, and see him disgorge the fish from his throat, still he sails majestically away, seemingly unhurt. "Mackerell cocks" (shearwaters) have been round us all day, and the "skiee" of the tern is often heard, while, with jerking flight and down-pointing bill, the little fellows pass and repass the boat: I distinguish the common, the arctic, the Sandwich and Dougal's; the two latter are very wary birds, and though common are seldom shot. The pomarine and two smaller species of skuas may be seen in almost every flock of kittiwakes, chasing and annoying the poor birds for their hard-earned fish; sometimes, though rarely, the big fellow himself may be seen, vassal to none but the noble old blackback. Numerous ducks, geese and land birds pass us, for they are performing their autumnal migration southwards. We have now reached Ireland's Eye, among the rocks of which are numerous cormorants, shags, turnstones, oystercatchers, curlews, whimbrels, dunlins, common sandpipers, kingfishers and herons, and, wherever there is a little shingly beach, a flock of ringed plovers are sure to rise with a plaintive whistle. Redshanks, greenshanks, godwits, gray plovers, knots and purple sandpipers are pretty sure to be met with if you land among the rocks. We stretch away now to Lambay, seven miles about from the "Eye," and there cormorants and shags may be seen in dozens upon their favourite rocks, which are always lofty and commanding, and generally isolated. (Cormorants and shags have favourite rocks in different parts of a rocky coast, where they will always make to to rest. In the immediate neighbourhood of Dalkey are the

Muglins and Clara, which are rarely without some of these birds. Where no commanding isolated rock is to be found the shag makes a buoy his perch. They seldom regularly perch like the cormorant, and unlike that bird, prefer the flat surface to the ring on top). They leave their rocks well "whitewashed" with their *excreta*, which is voluminous, oft ejected, liquid and of a white colour; but if allowed to remain and collect, particularly on wood, turns to a hard limey substance: a strong smell of fish and ammonia pervades these rocks, and is borne for some distance on the breeze. Here they rest themselves, or stand to dry, for after feeding they wash themselves thoroughly by striking the closed wing on the lower part of the back, ducking the head and even thrashing the water with out-spread wing till they are perfectly saturated. Some are standing with the wings expanded, gently fanning them; others have their dark pinions outstretched and motionless before the sun, their faces having a look as solemn and contented as good feeding could make them; others again are preening themselves, or standing on one leg with the head crouched on the shoulder, or asleep with the bill buried in the feathers of the back; but the greater part, and particularly the cormorants, are shooting their long snake-like necks from side to side, eyeing us intently, as if "smelling" danger afar. We have approached within a hundred yards, when some old fellow places his body in a horizontal position (they stand well erect), stretches the wings for a moment or so, and then, with a jerk from his feet, launches himself from the rock; he falls till just above the water, and then makes away with a strong rapid flight; most of the rest follow the leader and form a string: some remain and permit a long shot; they then either fly or drop like stones into the water. The wind has died out, and we are becalmed, but an ominous ground-swell portends something. We go ashore on the Island for an hour or two, eat our dinner, and shoot a dozen or two of rabbits, and some birds for their skins. It is now about six, and the sea like a mirror, no air ripples its calm surface, but that heavy up-channel swell is growing stronger. The shag and cormorant may be seen winging their way from all points, in long strings or solitary, to the caves of this Island for the night. They are flying uneasily around their roosting-places, as if calculating how high the swell might rise, or too wary to rest without making sure that no danger is near; one at last falls heavily to the pinnacle he thinks the softest, and the rest soon follow his example. Should two happen to rest beside each other they will put their bills together and caw like young rooks when feeding. They seem always very amiable. They always stand, day and night, head to wind and in a row, for if not so they would destroy each other by their powerful evacuations, which are often cast ten or twelve feet from them. It is twelve o'clock, P. M., and a puff of wind, as if from a furnace, strikes us, followed by one the very reverse; the anchor is up, and we make for the harbour of Howth, the lugs reefed down to mere pocket-handkerchiefs, and yet with four of us sitting on the windward-gunnel every blast lugs us gunnel under. We reach Howth Harbour, seven miles from Lambay, safely, and also seven miles from home, a good bed and tumbler of punch, both of which I put faith in after a hard day. With daylight we cross the bay and are home to breakfast.

Flight.—The shag's flight is generally low; I have never seen it take such elevated flights as the cormorant: it is powerful and very rapid, making quick headway against the strongest gales: it is performed by rapid beats and occasional sailings of the wings. The neck is carried out straight, and the feet beneath the tail. In turning the flight is slow, and is generally performed by a long curve. When alarmed it will throw itself, as it were, round, and is some time getting up full speed again. The impetus of its flight is very great. I have seen birds killed dead "duck and drake" along the water (*ricochet*, I should say) for twenty or thirty yards. It never fishes, as some have said, from the air, by suddenly darting into the water: they have mistaken the young gannet for it. In rising from the water it strikes it with the wings and feet, and will often make several efforts before getting up, particularly if full of fish, though at most times it rises with no more difficulty than any heavy diving bird.

Diving.—The shag puts more faith in its diving than in its flying power, if in danger: it must therefore think itself good at it. I always found it a pretty good diver, some even attaining powers little inferior to that of the great northern diver. It will generally when swimming permit you to get a shot, sitting half submerged. If missed it will try and avoid giving you a second chance, sinking the body and saturating the feathers of the back, so that shot slips off them as if greased. The dives exceed sometimes a hundred yards, though generally they are short and dodgy. The wings are and are not used under water. The bird generally sits deep in the water, the neck straight and at right angles to the body, the head parallel to the body. I have never seen the head thrust under water, as some say, to look for fish, neither do I believe that the shag sees his prey till he finds them on the bottom, and that he dives by chance. I have often seen the bird dip the bill in the water and then shake the head. In confinement I always found this was done to cleanse the bill of slime or any foreign matter, such as its own down.

Use of the peculiar Tail, the Hooked Bill and the Serrated Claw.—The uses of the tail of this family are very imperfectly known, and yet they cannot but be an object of conjecture to the ornithologist. I think the following uses, which I have noted, may interest some, as they never appeared in print before. The shag, being a ground-fisher, requires, in deep water particularly, a strong perpendicular dive. Most of the strong rocky coasts, about or in the vicinity of which shags are only to be met with, are full of deep holes, and in such places fish are more abundant; consequently these holes are greatly fished about by the shags. To accomplish these deep dives Nature has bestowed on the shag and cormorant a beautiful instrument, in the long, stiff, fan-like and limber-jointed tail. When diving, the bird, by a downward stroke of the tail, lifts the body out of the water, the return jerk of the tail, together with a stroke from the feet, turn it in the air (the whole action representing a semicircle), thus giving it a head-foremost plunge. The bird, when routing about the weeds and rocks at the bottom, generally keeps the body perpendicular, that is, tail up; it steadies itself in this position by means of the extraordinary tail. The bill is then thrust *sideways* into the chinks and crevices of the rocks, to which its peculiar food, wrasse, gobies, lashers, congers, &c., make for protection; the bill being used sideways can work in a much narrower crevice than if used straight, and if I had not ocular proof of this side insertion of the bill under stones, &c., to take out fish, the fact that most fish taken from the throats of shags had the hole made by the hook of the upper mandible of the bill in the side, would, I think, be sufficient to show that the fish are thus drawn from their holes, gaffed, as it were, and then taken to the surface and swallowed. So we see that the tail and bill are not *freaks* of Nature, but organs of vital importance to the shags. How any writer could state that the shag and cormorant use their tails as props while standing I cannot conceive, for such is quite erroneous; it is generally in the bird's way and trailed after it on land. When perched on a narrow or small footing the tail is used to balance the body. I should have stated before that, while at a great depth under water, the shag must find it much easier to keep in a perpendicular position than a horizontal one, as it cannot always succeed in taking a fish from its hole the first dive, and often for many dives, as any one who knows the bird may see by the repeated diving in one place. A bird also shot after diving in one spot for perhaps half an hour may only contain one or two small fish, showing that a plurality of fish was not the cause of its obstinately keeping in the one spot. I never but once saw a shag gorged with fish. The serrated or comb-like claw is used, as I have often seen in my aviary, to remove ticks from the head and neck, the only parts infested with them; these ticks are sometimes as large as a fourpenny bit. This comb is admirably adapted to the purpose: that it holds fish with it is a capital idea! What a clever fellow first found it out! a little flat toothed comb, not a quarter of an inch long, be enabled to hold a fish!

Food, and how Swallowed.—Living fish are the natural food of this bird, though stale fish (so that they have not lain in salt water), beef, fat and candles will be eaten in confinement; they will waste and not thrive on any but a fish diet: tallow passes pure and uninjured through them. Should the fish not be taken rightly in the mouth, it is not thrown up in the air and caught, as some have said, but is brought head to gullet by repeated small choppings of the bill; the instant the head is before the orifice of the throat the fish glides down like "clock-work." I had a poor blind shag all last winter till the end of last March, and though he was stone-blind he would never swallow even a strip of a flounder against the scales, but always turn it by repeated snaps till he got it the right way. They never tear a fish, or, as I have said before, hold it in the claws. Should the fish not slip down the gullet easily, it will be ejected to the bill again for another bolt, or shook about in the throat. When a fish is swallowed the head and throat are shaken, the latter making a purring sound; the fish are also stowed away by being pressed down with the head, the bird making many curious contortions of the neck. Any fish too big to swallow is rejected when the bird finds that such is the case; fish never are broken, but bolted entire. A fish from two to three inches in width can be swallowed by them, and an eel of two feet long is worked down by degrees entire; six full-sized herrings are managed at a time, the throat being capable of great distension. In their native element they are rarely found gorged, and never so much so as to be taken by the hand, as is written: at least for seven years among them in Dublin Bay I never saw a cormorant or shag to be caught with "chaff." I never saw them drink, though when annoyed they will dip the bill like the swan and goose. The throat and intestines are infested with Ascarides.

Cry.—The general cry is "gau gau," in a hoarse key, indicating anger; for various causes it is sounded almost musically: one of the warning notes is "go a é." The call is "crew a oop;" the first syllable vibrates the throat and is deep and guttural, the last two are wild and plaintive, and heard a mile or more off of a fine day. My experience of the shag is that it is solely a marine bird, and not to be met with after the waters of rivers loose their brackishness: the cormorant is quite the reverse. Thompson, in his 'Natural History of Ireland,' gives Irish instances of its occurrence inland. "I have been favoured," says he, "by the Earl of Enniskillen with two specimens of the green cormorant, taken far inland on different occasions. One of them in the month of January, 1839 (?), and I think soon after the great hurricane, was captured alive near Swanlibar, in the county of Cavan, under Ben Eachlin, and nearly thirty English miles from the sea. The lad who caught the specimen stated that it was accompanied by four more birds of the same kind. It was quite strong and fed well on fish. On the 16th of September of that year, the other individual, an immature female, obtained near Florence Court, about twenty miles inland, was sent to me. I have very lately heard from the Rev. G. Robinson, who resides near Lough Neagh, that the green cormorant habitually frequents that great sheet of water, where he has not, however, seen more than two in company, or more than that number in one day; they were generally sunning themselves in some of the islands when observed." The two first-mentioned examples were evidently driven inland by stress of weather. On Lough Neagh I have seen the cormorant, but not the shag, or, as it is termed, the green cormorant. Again, Thompson would lead his readers to consider the shag a scarce bird on the coast of Dublin:— "I have seen specimens which were killed in Dublin Bay, and was informed in 1837 (by Mr. H. H. Dombrain) that about the month of November or December, every year, six or seven of these birds appear near the Pigeon-House Battery there." Mr. Dombrain had very little experience of the shag in Dublin Bay, evidently, for I can count the bird by twenties every day from October till March on the White Bank (just beside the Pigeon-House Fort), at the mouth of the Liffey, on the bar, on the shoals of Sutton, Baldoyle and Howth, and along all the coast from Howth to Dalkey. At any hour of the day they can be seen swimming or flying. What is more, for a good purpose, I have shot a dozen in a few hours, and will engage to do so again within rifle-shot of the Pigeon-House, and only get every fourth bird I see.

Nidification.—The shag begins to nest from late in April, though the greater part wait, I think, till the beginning of May. They always breed in marine stations, such as among the crevices or shelves of isolated rocks, islands and cliffs; but the darling spot is a cave into which the sea flows. They breed still on Lambay, though in diminished numbers, since English and Irish "egg grabbers" and "dealers" set their blighting feet upon it—men I have seen taking home basketfuls of eggs, for what? The nest is composed of seaweed and other floating rubbish, sometimes lined with grasses. The eggs are four, sometimes five, long and slender (they vary so much that measurements are useless), covered with a coat of a limy substance, pure white at first, but soon soiled; the egg itself is watery bluish or geeenish. I should say the egg was nourishing; the white is very gelatinous when raw, the yelk flavoured like cod-liver oil, and most likely equally nutritious. The bird *does not sit erect* always, but horizontally on the eggs; the erect position I attributed to alarm, being thus ready to spring off. On land the bird walks well, though somewhat awkwardly, the foot being lifted high.

Plumages.—No. 1. The young when first excluded from the egg are devoid of feathers, except a few blackish hair-like things similar to goose-hairs; the skin is of a bluish black colour.

No. 2. After a few days the body is covered with a longish and greasy-feeling black or sooty down.

No. 3. Link 1. A mixture of No. 2: the down and the new feathers of first plumage.

No. 4. *First Plumage,* counted by me as the first summer. *Description: Upper Surface.*—From the base of bill along top of head and the neck brown, with a bronze gloss, *faintly green* in some lights; edges of the feathers cream-colour. Shoulders and scapulars dull brown, with a brown-bronze gloss; a green shade can be seen if looked for; a dark band at end of feather: in many individuals this band is *very indistinct,* and only seen in certain lights; the tip of the feather *broadly* fringed with cream-colour. Wing-coverts the same, but no band at tip. Back, rump, tail-coverts, sides and thighs bronze-brown, *fringed with tawny.* Quills and tail brownish black, outer filaments glossed with bronze. *Under Surface.*—Sides of neck and throat brown; edges *broad* and creamy white. Throat, breast and centre of belly *cream-white;* centres of some of the feathers of breast, and belly pale brown; sides of belly *pale brown;* the edges of the feathers *broad* and cream-colour. Chin and vent pure white. The centre of the throat is encircled by a collar of pale brown-centred feathers three inches deep. Bare flesh about bill *lemon*-yellow. Irides *yellowish green.* Feet blackish and cream-colour. Bill quite as thick after October as in the adult. (Taken from a bird now in my own collection).

No. 5. Link 2. This plumage gradually fades till November, when the feathers rejuvenate or transmute. This family never moults on the back or breast, but the feathers grow, as it were, without dropping out. In youth the feathers wear out and revive again, but in the adult they never fade much. I have a beautiful specimen of the shag now before me, in second winter, showing transmutation beautifully and lucidly. The head, neck, quills, tail and some of the large scapulars moult, also the down of the entire body; but the feathers of the shoulders, back, scapulars, rump, wing-coverts, &c., the breast, sides, belly, &c., never, to my knowledge, fall from the bird. Before the transmutation to first winter plumage the feathers fade very much, the edges becoming very bleached, but soon the bleached ends drop off, the bronze of the feather richens, the band gets more distinct. On the under parts the brown centre of the feather encroaches on the cream-coloured tip. By the end of December and beginning of January the bird may be called in first winter plumage. (In collection birds of October and November, first year.)

No. 6. *First Winter: Upper Surface.*—From the base of bill, along head and down neck dark bronze-brown, with a *real green* gloss; tips pale brown. Shoulders and scapulars bronze-brown, with still an undecided green gloss; the bar along edges of feather rather distinct; edges lightly fringed with pale brown. Back, rump, sides and thighs deep bronze, with a *strong olive-green tail.* Wing-coverts as in first summer. Sides of head, neck and throat a mixture of *green* and brown feathers, all tipped with pale brown. *Under Surface.*—Chin always and the vent in most cases pure white. The throat, breast and the centre of belly of a *burnt-umber* colour; the fringe pale, inclining to cream-colour. Sides of belly *deep hair-brown,* lighter edges. Eye-ball *pea-green.* Bare flesh at bill colour of a *ripe lemon.* Feathers scanty before eye. The collar on throat is darker and very distinct. (From a bird in collection shot early in January). A diagnosis here will be unnecessary; the italics will distinguish first summer and first winter. The dark brown of the under parts alone is a sufficient distinction. In life the two plumages not coming together cannot be confounded.

No. 7. Link 3. From the middle or latter end of January another transmutation begins. It is very gradual, extending to May and sometimes further. It is only on the upper surface of the body. The feather now, when fully transmuted, is similar to that of the adult; but, unlike the adults, it is perishable. A description is useless; it is merely a mixture of first winter plumage, half transmuted feathers, and those fully turned, which, as I said, are as the adults. The under parts as in first winter. (In collection a bird in March).

No. 8. *Second Summer. One year old.*—June. The whole of the upper parts have transmuted, and generally a good many of the wing-coverts. They are now unlike the beautiful rich adult feathers they were when first revived, but are still unlike any other stage, for though brownish they are of a good rich green; some have a slight fringe of brown. When flying the old worn coverts have a very faded look. Feet still the same cream-colour and black. Under parts still as in first winter. Naturally this stage cannot be confounded with any other. In collectious the date is sufficient. It assimilates slightly with the second winter in December, but may be known from that stage by the under parts containing none of the dark feathers assumed at that time.

No. 9. *The Second Autumn.*—Is a faded addition of second summer. A bird in October is—*Upper Surface.* From base of bill along top of head and neck bronze-brown, with a *dark green gloss;* some have and some have not the pale tippings. Shoulders and scapulars bronze-brown; the *green gloss and the band* at end of feather now *distinct;* edge of feather well fringed with tawny. Back, rump, sides and thighs bronze-brown, with a *rich green gloss.* Wing-coverts nearly as in first winter. Sides of neck brown, the feathers worn *small and lance-shaped,* sometimes mixed with blackish green feathers. *Under Surface.*—Chin white; vent cream-colour; throat, breast and belly as in first winter, except that the feathers have become *lance-shaped* on the breast and throat, and that the collar is scarcely definable from the breast. Bare flesh at bill *orange-yellow.* Eye *pea-green.* Feet still the same. *Diagnosis.*—The italics distinguish this stage from that of first plumage, the only stage it could be confounded with in nature. It is something like first winter, but the two stages do not occur together, so it cannot be confused while in nature: in a collection the date is sufficient. By most authors this bird is thought the young of the year, and the great similarity in the under parts must have caused this error. The bright greenish bronze of the upper parts, the real lance-shape of the upper feathers, and the very distinct band at end tells it at once from first winter in the cabinet. The lance-shape of the breast and throat-feathers is also a distinguishing mark. (In collection, October).

No. 10. Link 4. A mixture of second autumn, and the new transmuted feathers, which are similar to those of the adult. This transmutation begins in November and extends to February. Cannot be confounded with any other stage, as the *under feathers also turn and become like the adult.* Two birds in collection, shot on the 28th of November, have the back and under parts dotted with new feathers.

No. 11. In December the under parts are like those of the white-fronted goose.

No. 12. Two birds shot the end of January, 1866, have the upper surface almost as in the adult. Some of the scapulars and wing-coverts show the transmutation beautifully; some feathers have only as yet taken the perfect shape; others have the dark band, but are still bronze; others are the rifle-green of the adult, with perhaps still a light fringe or a tuft of brown at tip, which has yet to fall off, while the greater part are adult. The sides of the throat are still mixed with brown. Chin white, black feathers cropping through. Back, rump, sides and thighs as in the adult. Under parts various shades of brown; great numbers of the feathers as in the adult. Irides rich green. Feet still the same. Flesh at bill deep orange. (In collection).

No. 13. *Second Spring.* May.—Very similar to the adult. May be known from it by the pale feet, the orange flesh at bill and frequently a little white about chin. It has no crest.

No. 14. *Third Summer.* July.—Very similar to the adult. Feet still distinguish it by their pale colour, the quantity of yellow at base of bill, by its having no crest, and also by the faded though still perfect plumage of the adult. It does not breed at this age. This is considered the adult by many, and all authors I have read. Hence we read that the adult's plumage fades by the summer sun, and that the crest is lost after laying.

No. 15. The plumage revives again in the autumn, and by October the bird is in—

No. 16. *Third Winter.*—Exactly similar to the adult, but still crestless.

No. 17. In the beginning of January the crest appears sprouting, and by May the bird is most probably nesting. It is at all events in full adult dress by February, after almost three years of immaturity. (In collection, crest sprouting, January).

No. 18. *Adult Dress, taken from a bird shot January 26th,* 1866.—Bill, upper mandibles blackish, at base tortoise-shell; under mandibles all tortoise-shell. Flesh under eye orange; at base of under mandibles black, dotted with little warts of an orange colour. Eye intense dark green. Feet grayish black. Head, neck, throat, back and rump dark lustrous green. Shoulders, scapulars and wing-coverts dark green; a band of velvet black borders end of feathers; a beautiful golden lustre pervades the whole feather. Under parts rich bronze-green. Tail and wing-quills black; the outer filaments and also the large scapulars and tertials glossed with bronze-green. On the head is a crest of recurved green-black feathers, about two inches high. In this specimen they are well worn and not new.

It is said that the shag loses the top-knot in winter and the end of summer. The birds from which these observations have been made must have been the young in third winter. That the crest is worn in December I can state from experience: I cannot state now positively that it is not lost after the young are hatched. It is certainly lost in autumn for a time, a new one coming by moult. The only difference I can see in the adult dress in spring from that of winter is a number of white hair-like feathers with a little tuft at tip, coming out in the neck, in spring. They have seemingly been unobserved before. Adult dress never fades.

This ends my account of the shag. I have determined this summer, if possible, to procure all the summer plumages from the breeding-stations; I shall then be happy to show the stages I have written to any ornithologist who will give me a call. Other years I neglected getting or preserving shags in summer, being occupied on other subjects.

The next letter I write you on this family will be on the cormorant; to be followed by one on the Natural History of the brownheaded gull (*Larus ridibundus*), and an account of all its plumages, with some questions about what is the masked gull (*L. capistratus*).

HARRY BLAKE-KNOX.

Dalkey, County Dublin,
April, 1866.

Ornithological Notes from North Lincolnshire.

By JOHN CORDEAUX, Esq.

(Continued from Zool. S. S. 217.)

APRIL, 1866.

Common Gull.—After the heavy rains during the first week in April large flocks of these gulls came daily to feed on the grass-marshes, in company with rooks and starlings. It is rather an unusual occurrence in this neighbourhood to see them thus feeding so near the Humber, as their habit is to forage far inland on the high wold district, often going from twenty to thirty miles from the sea. During the winter flocks of these birds may be daily seen passing over in the early morning to their distant feeding-grounds, returning to the Humber from three to five o'clock in the afternoon. These flocks usually fly in the shape of a V: in windy weather low, and in still calm weather at a great height. The greater portion of these gulls which frequent the Humber during the winter season are adult birds.

Snipe.—In answer to the inquiry of Mr. Jeffery (S. S. 166), it is not unusual for a wounded snipe to throw itself into the position he describes—namely, the tail spread out like a fan and held at right angles to the body. This practice is also common to other of the waders, and I have always thought that this peculiar posture on the part of a wounded bird was merely an indication of extreme disapproval at the unfortunate position in which it found itself placed. Wounded birds of many species, on the approach of their captor, at once throw themselves into a defensive attitude; and the snipe will thus naturally assume the most formidable appearance it is capable of.

Starling.—On the approach of spring, and before breaking up into pairs for the breeding-season, the congregated thousands of these birds exhibit unusual activity; they delight in keeping long together on the wing, going through the most marvellous aërial performances. The evolutions of a large flock of starlings over our marsh district, at this season, is always a most interesting sight. It is extraordinary with what precision the whole flock will instantaneously turn,—now to left, now to right,—every bird wheeling exactly at the same moment, as if by word of command. They have often the appearance, in the distance, of a towering column of smoke, waving slowly backwards and forwards as it gradually advances; the next moment perhaps this column will contract into a spherical body, looking like a gigantic ball—no sooner seen than it vanishes altogether, as the birds change their line of flight, reappearing again as suddenly as they had vanished, and again rising into the tall soaring column, quickly again to contract and spread out from each flank into a long thin line, like a body of skirmishers. It is only, however, in the spring, and before the breaking up of the flocks, that starlings attempt these complicated manœuvres, their evolutions during the remainder of the year, when retiring to roost, &c., falling far short of these their vernal performances. Few of our common English birds are so thoroughly insectivorous as the starling. I never open them without finding insect remains in their stomachs: at this season it is no unusual occurrence, in our marsh district, to see a flock broken up into small parties in close attendance on the sheep, moving round them as they lie on the grass, and jerking out from their wool the "fags," which, attracted by the warm sun, are crawling on the surface, thus making a sort of "happy hunting ground" of the sheep's back, performing the same kind service which travellers say the little "beef-eaters" do for the cattle of South and Western Africa.

Mountain Finch.—A very beautiful specimen of this finch, a male in mature plumage, was this day (April 10th) forwarded to me by a friend. It was killed in the neighbouring parish of Barnoldby-le-Beck, and, curiously enough, shot by mistake; a man shot a stock dove in his stack-yard, and on picking it up found this bird lying a few yards beyond in the line of fire.

Golden Plover.—April 10th. Observed three of these birds feeding in company with peewits in the grass-marshes: they had nearly acquired the full summer dress: the few gray plovers on the flats do not as yet show any signs of a change of plumage. I have remarked that golden plovers, as a rule, assume the black under parts weeks before the gray plovers show any signs of a change.

Gray Plover.—These birds have a habit, when taking flight and when alighting, of throwing up their wings over the back, showing the black axillary plume; they may readily be distinguished by this when at a considerable distance, as the black feathers show very plainly against the white ground of the under parts.

Dates of Arrival of Summer Migrants in North Lincolnshire in April.—April 4. Wheatear; 5. Tree Pipit; 11. Chiffchaff Warbler; 14. Chimney Swallow; 16. Cuckoo; 18. Willow Warbler and Yellow

Wagtail; 19. Lesser Whitethroat; 25. Whinchat; 29. Nest of young thrushes flown.

JOHN CORDEAUX.

Great Cotes, Ulceby, Lincolnshire,
April 30, 1866.

Ornithological Notes from Norfolk. By HENRY STEVENSON, Esq.

(Continued from S. S. 87.)

JANUARY TO MARCH, 1866.

THE extreme mildness of the past winter accounts for the scarcity of fowl at any time on our coast, or of the rarer specimens which, in sharp weather, are not unfrequently met with. Even the frost and snow which occurred at intervals during January and February were of too short duration to have any material influence, although the cold was severe whilst it lasted, and the gunners on Breydon as well as on the flat shores of the Wash, concur with the keepers of the few decoys still worked in this district, as to the blank nature of the past season. The only particular feature, perhaps, worthy of note, has been the appearance in some numbers, both in Norfolk and Suffolk, of roughlegged and common buzzards, with a few fine peregrines.

Longtailed Duck.—An immature female was sent me from Salthouse, on the 6th of January, which confirms my previous experience that these birds occur at times in mild winters when least expected, and are often altogether absent in the hardest weather.

Quail.—An adult female was taken at Salthouse on the 6th of January, and about the same time a singularly small and dark variety on Mousehold Heath, near Norwich. This curious-looking bird presented the same peculiarities as are said to distinguish the small dark varieties of the common partridge occasionally met with in heathery districts. The whole of the ground colour of the plumage, commonly of a pale brownish yellow, were in this bird sooty gray, particularly noticeable on the chin and throat; the usual light streaks also pervading the feathers of the back and sides, forming two parallel lines on either side of the shafts, were in this instance dark gray, with the shafts of each feather pure white.

Blacktailed Godwit.—A single specimen shot on Breydon, on the 10th of January.

Common Bittern.—Two fine specimens exhibited in our fish-market, one on the 10th of February and another on the 2nd of March.

Hawfinch.—An adult female killed at Hempnall, on the 12th of February, and another at Mulbarton; a small flock were also seen in a garden at Thorpe about the same time.

Spotted Crake.—A female, forward in egg, was killed at Ludham, on the 23rd of March.

Waxwing.—A friend of mine residing at Thorpe, near Norwich, informs me that, some time in the middle of March, he watched one of these beautiful but most uncertain visitants in his garden, and having a good glass was quite sure of its identity. We have had only chance stragglers now for several years in this district.

Hobby.—An adult female was shot at Belaugh, about the 3rd of March, an early date for this summer migrant.

Sparrowhawk.—Another beautiful little red male was killed about the middle of March, at Fardenhall, where the one mentioned in my previous notes was procured.

Great Northern Diver.—About the end of March a fine specimen, apparently, by the size and colour of its beak an adult bird, was shot on Surlingham Broad. The throat and under parts are pure white, and the back gray, but each feather having two shades of colour. No white spots of any kind.

Snipe, both common and jack, were tolerably plentiful on their return northwards, towards the end of March, but none appeared in our market after the 31st of March: fowl extremely scarce, but several fine male shovellers were killed in different parts of the county.

Note.—Nightingale first heard, April 14th; cuckoo on the 11th; swallows on the 12th: all near Norwich.

APRIL AND MAY, 1866.

In spite of the prevalence of N.E. winds, and the unusual severity of the weather throughout the past month, and even May commencing with frosty nights and hail and sleet by day, our summer visitants have arrived about their usual time. The cuckoo was heard by the 11th of April, swallows were seen on the 12th, and the nightingale was in full song by the 14th, being all of them rather early than late for this county; but I cannot say that I set much value upon statistics of "first arrivals," unless the recorder has unusual opportunities for out-door observation, and has kept a register of such facts during several successive seasons. It by no means follows that the "first swallow" of any correspondent is the earliest arrival, and in such cold springs as we have just experienced our tuneful warblers creep into the groves and hedges, and give no certain indication of their presence till the first bright morning tempts them into song. House martins seem very scarce this season, and the marked diminution in their numbers of late years is more easily perceived than accounted for. The extreme dryness of the last few summers has rendered the building process more than usually difficult, and here, from the lack of other moisture, the birds avail themselves of the passage to and fro of the water-carts near the city to collect mud from the freshly sprinkled roads. The extreme heat also and the absence of rain have rendered the nests extremely brittle, and many a luckless brood has fallen with the *débris* of their little nurseries. It is probable, however, that the chief cause of their scarcity may be attributed to the diminution of insect food, through the extensive drainage which, on all sides, has altered, and is still altering, the whole face of the country. As yet (May 8th) the martins have not commenced their parental duties,—indeed have scarcely visited their old haunts,—but in sportive flights and feasting have spent their days upon the various streams and the rich meadow lands adjacent. Both swallows and martins have, however, suffered much from the unusual severity of the weather, and a friend whose garden joins the river, but within the city boundaries, informs me that on one occasion he observed numbers of them settled on the grass in an extremely weak state, others clinging to the bark of the trees, and in every action showing the effect which so inclement a season has upon these delicate creatures. Blackcap and garden warblers are rather more common than usual in this neighbourhood, and the willow wren, always abundant, is particularly plentiful. One which frequents a lofty willow near my garden sings incessantly the day through, and year after year the same tree attracts this species, and not improbably the same bird. I have heard and seen the nightjar once or twice, but have not yet noticed any swifts. Nightingales abound in all their usual haunts, and in spite of the cold biting winds have been heard constantly by night and day. Of rare occurrences the following are most worthy of note:—

Common Linnet.—On the 10th of April a curious variety was brought me alive by a bird-catcher, having much white about the head, a perfect saddle of pure white across the back, and the breast prettily mottled with white and red.

Hoopoe.—But one of these ill-fated wanderers has been slaughtered here this spring, which was killed about the 19th of April. When will people learn to know that, however strange in plumage, this is not a *rara avis.*

Terns.—A very beautiful specimen of the arctic tern, the under parts deeply suffused with the usual smoke-gray tint, was killed on the 14th of April, and several black terns were shot on Breydon about the same time.

Velvet Scoter.—A female for sale in our fish-market on the 7th of April.

Puffin.—An immature bird, with a particularly small and ungrooved beak, was killed at Blakeney about the first week in April.

Eared Grebe.—An example of this rare species was killed at Breydon on the 10th of April (the same as recorded in the 'Field' of April 21st). The yellow plumelets on the sides of the head were tolerably pure, but the throat and chin were still much mottled with white, but the bird would have attained its full plumage, probably, in another week or two.

Great Crested Grebe.—No less than eight magnificent great crested grebes, just returned to the Broads from the sea-coast, were, I am sorry to say, brought to a birdstuffer in this city for ladies' plumes, and sold for a shilling each. When will the votaries of fashion listen to reason, and not exterminate a species for the mere whim of the moment? Kingfishers and even the beautiful little grass parrokeets have been in great demand this winter—for hats!

Brambling.—These birds have been extremely scarce this last winter, though so remarkably plentiful the year before. The great abundance of beech-mast in 1864 was, I believe, a great attraction, which has been almost equally wanting in the past autumn. A male brambling in my aviary, which I have had over three years, has commenced (April 24th) its usual migratory call-note,—a shrill whistle or chirp, which is uttered every night at intervals from about 8 P.M. till near daylight, the bird becoming extremely wakeful, and with raised crest and fluttering wings indicating its excited condition. The least noise or a passing light near the cage sets him off at once, and on moonlight nights he calls incessantly; and this, as I have remarked during several seasons and with different individuals, goes on till the beginning of June, when it ceases altogether.

Rook.—A curious variety, killed at Ranworth about the beginning of May, having the back, wings and tail silvery gray, and the head and under surface of the plumage dull grayish black. Young rooks not yet out of the nests (May 8th), except a few very early ones, which are able to take care of themselves.

Turtle Dove.—On the 6th of May I found a flock of at least two dozen frequenting a rye stubble not yet ploughed in. These, I imagine, were a migratory flight resting on their passage, as I never before met with so many together in the spring of the year, although several pairs remain to breed during the summer.

Spoonbill.—A fine old male, which had been seen about Breydon for nearly a fortnight, was shot on the 2nd of May, and had a rich band of buff across the breast, but the crest not much elongated. The throat contained three or four three-spined sticklebacks, quite perfect, and the stomach was filled with the remains of others, mixed with sand and silt from its last feeding-ground.

Whimbrel.—Were killed at Blakeney on the 1st of May, and is known there as the "May bird."

Bartailed Godwit.—Appeared on Breydon on the 7th. The 12th of May is known amongst Yarmouth gunners as "godwit day," as they are then commonly seen on the "muds," especially with a S.W. wind and drizzling rain.

H. STEVENSON.

Norwich, May 8, 1866.

Ornithological Notes from West Sussex.

By W. JEFFERY, jun., Esq.

(Continued from S. S. 168).

MARCH, 1866.

Gray Wagtail.—March 14. Saw a gray wagtail, in which the change in plumage had just commenced, a few black feathers showing on the throat about the base of the bill. This species usually leave us about the end of the month.

Common Bunting.—Have seen nothing of the common bunting throughout the winter until the middle of March; about this time a few appeared, and by the end of the month they were, true to their name, common. They may now be seen almost all the day on the topmost twig of a hedge, on a clod of earth, or some other eminence, uttering their "tic-tic-tic-tic." &c., &c. This song, if it can be so called, not being heard in winter, is perhaps a frequent cause of a bird so inconspicuous in colour being overlooked. Their only note in winter is a single "tit" or "tit-tit," uttered generally while the bird is on the wing. Still the only conclusion that one can arrive at is that they emigrate from here as the winter comes on, either to some locality where a suitable food is more abundant, or to a warmer climate. That they do not all leave this country in the winter is pretty certain, since they are not unfrequently found on the coast during severe frost; but are not these birds from more northern parts? The common bunting is very rarely met with in the Weald of Sussex.

Grebes.—About the middle of March I was shown two heads of the great crested and two of the Sclavonian grebe, recently killed birds. The skins, of course, cut up for ornaments.

Wood pigeons remain in flock as late as the end of March. Redwings and siskins seen up to the 17th. Chiff-chaff first seen on the 30th; wheatear on the 31st.

APRIL, 1866.

Arrival of Immigrants.—In the following list of immigrants I have given the earliest dates of arrivals that I have been able to ascertain with certainty:—

April 4th. Willow Warbler.
„ 5th. Wryneck and Blackcap.
„ 9th. Swallow and Cuckoo.
„ 10th. Ray's Wagtail.
„ 12th. Tree Pipit and Nightingale.
„ 16th. Grasshopper Warbler.
„ 17th. Sedge Warbler, Common Whitethroat and House Martin.
„ 18th. Wood Warbler.
„ 19th. Whinchat.
„ 28th. Redbacked Shrike, Swift and Common Sandpiper.

It is much easier to register, with tolerable accuracy, the dates of arrivals than those of the departures, the arrivals in spring more especially. The greater part of the spring immigrants are in full song when they come over, and their voices having been silent to us for several months are sure to attract the especial attention of the ornithologist the first time they are heard after that lapse of time. After all, however, it is, as Mr. Blake-Knox remarks (S. S. 220), "another may have seen (or heard) it before": and of this I have taken advantage, giving dates earlier than my own, whenever I have felt that I could rely on the information received from others. The cuckoo's first appearance is earlier this year than I have ever noticed it before, and I rather hesitated on giving a date so early as the 9th, but the person who told me of it was positive, and I have since read in the 'Field' that it was heard in Essex on the same day, and near Southampton one day earlier.

Meadow Pipit and Linnet.—Meadow pipits numerous about the first week in April, and small parties of the common linnet seen for some weeks past; frequently observed passing in a northerly direction.

Moorhen.—A brood of young moorhens was hatched on the 1st of April. The nest was in a pit at the back of a cottage, where a pair of moorhens nested last year. The present tenants of the pit, both old and young, come regularly to feed with some fowls just by, and the old birds do not hesitate to "pitch into" the fowls if they interfere with them in any way. On the 23rd this pair of birds had completed another nest and deposited a second lot of eggs.

Shorteared Owl.—April 11th. Saw, at Chichester, a shorteared owl, in the flesh, which had been killed in the neighbourhood a few days before.

Lesser Spotted Woodpecker.—April 11th. A pair, male and female, were killed in Oakwood, near here, about the above date. The crown of the head, in the female, was white, with just a tinge of red about it, forehead brownish.

Garganey.—April 11th. A pair of these handsome little ducks killed near Selsey: they are now in my collection. A male in the Chichester Museum was killed in the same month, April, some years ago. It is a scarce bird in Sussex.

Gulls.—April 11th. Saw thirteen large gulls, flying N.E., in the evening: could not see enough of them to distinguish the species, but the plumage appeared to be gray.

Ring Ouzel.—April 12th to 20th. A few of these birds have been obtained during the migration. As a rule, they are not nearly so numerous, nor so frequently met with here, at this time of the year as in the autumn.

Black Tern.—April 14th. About this time the black tern appeared on the coast, and about some ponds several miles inland, even in close proximity to the city of Chichester. Whenever I have previously met with this species in the spring, it has been in the month of May. The stomach of a female, killed at Birdham, contained fourteen or fifteen full-sized shrimps.

Redthroated Diver.—On the 16th of April I saw, in the flesh, a redthroated diver in full summer plumage. It was killed a day or two before in Emsworth Harbour, on the western border of

Sussex; not a feather corresponding with the winter plumage remaining.

Longtailed Tit.—Both old birds roost in the nest at night. I had known where there was a nest constructing, and, thinking that I had allowed time enough for the full number of eggs to be laid, I visited it on the evening of the 21st, for the purpose of taking the eggs for my collection. Having turned out *both* birds, I was obliged to dislodge the nest, which was built between two large branches of an ash-tree, before I could get out the eggs. Finding only five I replaced the nest as well as I could, that the birds might use it again if they cared to do so. Passing the same way about a week after, I ascended the tree to ascertain if they had taken to it again, when I found the hole stopped, but five more eggs in the nest, and these eggs *stained*. I imagine that I must have disturbed the *waterproofing* of the nest, where it joined the tree, when I displaced it, and so caused the birds to forsake, and the eggs to be stained, and that the birds stopped the entrance before leaving.

Waders.—I have not had opportunity to note down arrivals correctly, but up to the end of April, whimbrel, bartailed godwit, greenshank, redshank and gray plover have arrived.

W. JEFFERY, JUN.

Ratham, Chichester, May 10, 1866.

Hen Harrier near Barnstaple.—It becomes a melancholy duty to chronicle the capture and death of birds which, once common, are now fast disappearing from our Avifauna, being each year surely and effectually "improved" from off the face of our country. On Easter-day I received a fine example of the adult male hen harrier from Sir Arthur Chichester, which had been trapped by one of his keepers near Barnstaple. This species used to be no uncommon bird in the West of England, breeding among the furze on many a high-ground and moor; but it is now becoming rare, and can only be looked upon as an occasional straggler.—*Murray A. Mathew; Weston-super-Mare, May* 4, 1866.

Woodchat Shrike and Golden Oriole at Brighton.—I and my brother have been successful in shooting two very rare birds in one day, namely, the 4th of May; the first, a woodchat shrike, was seen by my brother at Preston, near Brighton; on his first observing it, it was on the ground: as soon as it observed him it flew into a thorn-bush, where he very quickly shot it, and found it to be a fine male. He had not walked more than two hundred yards farther when he met with a pair of golden orioles, sporting about upon the lawn of Preston Place: as they were on private ground he immediately came home with the news: I at once went to the house, and having obtained permission of the owner to search his grounds I succeeded, after some bours' manœuvring, in shooting the male: the female at once disappeared, and has not been seen there since.—*John Pratt; 44, Ship Street, Brighton, May* 8, 1866.

Golden Oriole at East Grinstead, Sussex.—A male specimen of the golden oriole was picked up dead, lying on its back with outstretched wings, near East Grinstead, Sussex, on Monday last, the 14th of May.—*William May; East Grinstead, May* 17, 1866.

Golden Oriole in Suffolk.—I have just examined an adult female of this handsome species, which was killed about the 3rd of May, at Chedistone, near Halesworth. The plumage is of the usual yellowish green tint, with the tail-feathers broadly edged with yellow. In the stomach I found the hard portions of some large berry, part of a caterpillar and the abdominal parts of a good-sized humble bee.—*Henry Stevenson; Norwich, May* 8, 1866.

Golden Oriole at St. Just.—Yesterday a specimen of the golden oriole, in fine plumage, was observed throughout the day in the Vicarage-grounds of St. Just; the Rev. G. Hadow reported the fact to me, and he informs me that a magpie made a furious onslaught on the bird and drove it off; it returned however, afterwards, and seemed inclined to adopt the locality of the garden, the only suitable covert for its nidification in the parish, for its residence. Mr. Hadow informed me that he heard the cuckoo on the 7th, and this leads me to note a few dates of the arrival and song of our summer visitants up to this morning, at this place and at Trebartha, in the east of the county:—

April 20. Willow Wren sings.
„ 21. Blackcap and Cuckoo sings.
„ 24. Tree Pipit and Wood Wren (Trebartha) sing; Gray Wagtails paired; Sand Martin appeared; Spotted Woodpecker chirping.
„ 25. Dipper paired.
„ 27. Corn Crake heard; Whitethroat; Grasshopper Warbler.
„ 28. Sedge Warbler.—*Edward Hearle Rodd; Penzance, April* 27, 1866.

Nesting of the Dipper.—The dipper is a common bird on the upper portions of the River Lynher, where several mountain torrents contribute to the stream. I observed several pairs in the last week, and they were busily engaged in their nidification. I thought they were much earlier in their nursery pursuits, but probably they have sympathized with the general and extraordinary backwardness of the spring. I found two localities of their breeding this year, one under a bridge spanning the river, and the other a covered drain conveying a large stream from a pond: my nephew writes me word that he watched the bridge after I left for home, and soon observed a dipper alight with a piece of moss: after remaining a few minutes it perched on a stone in the river under the bridge, and flew up under the centre pier, and as quickly as a wagtail darts up after a fly; it flew off almost immediately after a few bobs of the tail on the same stone. My nephew very soon took to the river to examine the locality, and at the top of the pier, under the centre of the bridge, there were three nests of this year's building, two in a rudimentary state and the third approaching completion, but evidently only recently begun, as it was composed of a mass of water-weeds and wet grass—a regular wet podge, in fact. The under part of the nest was nearly finished, and the dome commenced, but not lined; the other two nests were dry, but fresh, and the fact of the floods of the past winter having reached to the floor of the bridge is a clear proof of these would-be nests being the "sport" of this year, as they must have been washed away if last year's nests. It appears, therefore, that these birds, like the wren, make several attempts to build before completing their perfect and final nests, for apparently sport and amusement. Dippers do not altogether confine themselves to streams, for I observed them fly across from one tributary to another with a strong, rapid flight.—*Edward Hearte Rodd; Penzance, May* 2, 1866.

Dates of the Nightingale's Arrival at Woolpit, Suffolk.—Seeing you are desirous of hearing the time when the nightingale arrives, I take the liberty of sending you the following notes, as taken from an old note-book:—

1850. April 11.
1851. „ 20.
1852. „ 14.
1853. „ 23.
1854. ———
1855. April 21 (doubtful).
1855. „ 29 (distinctly).
1856. „ 21.
1857. „ 19.
1858. ———
1859. April 24.
1860. „ 30.
1861. „ 22.
1862. „ 20.
1863. ———
1864. April 17.
1865. „ 16.

The nightingale has not yet (April 15th) been noticed, but on Saturday the cuckoo was heard.—*T. G. Tuck; Tosdock House, Woolpit, Suffolk.*

Richard's Pipit obtained in Leadenhall Market.—I obtained a remarkably fine specimen of this rare bird from among a number of larks in Leadenhall Market, on the 8th of March last: it is now preserved, and in my collection.—*William Machin.*

Eggs of the Longtailed Titmouse and Goldcrest in one Nest.—A nest of the long-tailed tit was brought me a few days since containing thirteen eggs, nine of which evidently belonged to the owners of the nest; these were quite fresh-laid: the remaining four I identified as those of the goldencrested wren; they were slightly sat upon. These latter were much smaller and of a darker hue, with a band of dull reddish brown circling the larger end, while the former were spotted with pale red spots, more particularly around the larger end. The eggs of the goldcrest were placed at the bottom of the nest, with the others arranged around. The only explanation I can give is that, after the little architects had constructed and prepared their abode, they had apparently, from some cause or other, left it, and the nest was then taken possession of by the goldcrests, who commenced laying their eggs, but were driven off by the return of the former occupants, who resumed their allotted duty without expelling the offspring of the intruders. Is such an event probable? Has the goldcrest ever been known to lay its eggs in the nests of other species, without taking the trouble of constructing a home for itself?—*T. E. Gunn;* 3, *West Pottergate, Norwich, May* 5, 1866.

Chaffinch in a Hen's Nest.—Yesterday a lady friend of mine, on going to look at her chickens, was surprised at seeing a dark tail sticking out from under the hen (which, by the way, was a Cochin), and to her astonishment, when the hen got up, out flew a chaffinch. This is the first time I have heard of a small bird doing such a thing. Could it have gone there for food, warmth or building materials?—*E. D. Hamel; Bole Hall, Tamworth, May* 16, 1866.

Effects of Cold on the House Martin.—Messrs. Shephard and Whitears, in their 'Catalogue of the Birds of Norfolk and Suffolk,' say, "On the mornings of the 5th and 6th of June, 1816, the gardeners (at the residence of the Rev. Mr. Fonnereau, of

Christchurch, Ipswich) could have taken up hundreds of these birds (swallows) in their hands. They were collected in knots, and sat on the grass in parcels of thirty and forty. This, there is reason to believe, was owing both to cold and hunger. * * * The same summer, house martins were found dead on the ground in Norfolk, and others were so weak that the cats sprang on and caught them as they flew near the ground. A pair of these birds, which had completed a nest under the eaves of our house, were found dead in it, before any eggs were laid. From the above circumstance, birds of this kind were unusually scarce throughout the summer."—*H. Stevenson; May* 14, 1866.

Ortolan Bunting in Kent.—On the 10th of April I saw here (Cobham, Kent) a bunting, which, in my opinion and in that of the Editor of the 'Field,' was undoubtedly Emberiza hortulana. It was sitting on an elder bush near a large pond, and remained there for some minutes. I at once distinguished it by its green head.—*Clifton; Cobham Hall, Kent, May* 2, 1866.

An ancient Raven.—I yesterday saw the largest and most ancient raven I have yet beheld. For years past Brean Down has been frequented by a pair of ravens, whose depredations every spring upon the neighbouring lambs have been a great grievance to the farmers upon the flat under the Down. Nobody could get within shot of the birds; no one could get at their nest; no trap, however artfully baited, could ensnare them. The other day a man observed one of the birds alight on a spot to which he could creep without the birds either winding him or seeing him, and as he had a gun in his hands, he at once attempted to get within shot, and succeeded in slaying one of the terrors of the surrounding farms. He carried the bird about in triumph from farm to farm, receiving gratuities and as much beer and cider as he cared to drink from all the farmers, who were most delighted to see such a trophy, and then took it into the birdstuffer of this place to have it stuffed. Looking in upon my friend the birdstuffer yesterday afternoon, I beheld this formidable thief and tyrant. The stuffer told me he measured six feet from wing to wing, but I can hardly credit this measurement. The bird gave me the appearance of an immense age. He was nearly twice the size of any raven I had before seen. The long wiry hackles of his neck were of a gray-black. His beak was indeed a tremendous weapon. One powerful blow of it could have broken a man's fore-arm, and how easily must it have split the skull of many an unhappy lamb or rabbit: it was indeed a veritable pick-axe. And then you should have seen the fellow's stalwart legs, his powerful feet, and the rich and glossy black of his back, wings and belly. I never saw such a realization of a bird of evil. Very likely it was the same bird who, just ten years ago, presented me involuntarily with a fine specimen of the common buzzard's egg. One May day I was walking on the "sidlings" of Brean Down, when, turning a corner of the cliff, I came suddenly upon a raven, perched some twenty or thirty yards above me, with some white object in his beak. Startled by my appearance the bird made hastily off, and left his booty behind him. I managed to climb to the spot and found there a perfectly fresh egg of the common buzzard, with just the hole in it made by the tip of the raven's beak, as he had flown with it from the nest, and that how many miles away? Perhaps this very raven may have been the bird now exhibited in the birdstuffer's shop. There have been a pair of ravens, and but one pair, on the Down from time immemorial. Doubtless the survivor will procure another mate.—*Murray A. Mathew; Weston-super-Mare.* [Communicated by Mr. J. E. Harting.]

Bee-eater near Bristol.—I have to record the occurrence of this beautiful and rare visitor, four specimens having been shot in this neighbourhood during the present week, three of which are in my possession. The birds, when first observed, were hawking for bees round a number of fruit trees in blossom, and in the neighbourhood of a number of bee-hives. Their flight is most graceful and beautiful; at one time soaring in graceful circles at a great height, and darting with great velocity after their prey, which was often apparently some of the largest species of Bombus: when one of these was caught it would be carried at the point of the bill for a half minute or more, and then, with a sudden and peculiar turn of the head and neck, the insect would be swallowed entire: I noticed this repeatedly. At other times the birds would sit upon some dead branches of a large elm and of a cherry tree, and make short excursions after bees that might be flying past or gathering round the fruit flowers, sometimes returning to the same perch again, like the flycatcher, but oftener, circling round for a short time before settling again. The bees appear to be always swallowed while the bird is on the wing.—*George Harding, jun.; Stapleton, near Bristol, May* 5, 1866.

Variety of the Great Spotted Woodpecker.—On the 23rd and 25th of April two examples, male and female, of the great spotted woodpecker were killed at Worlingham, near Beccles, in Suffolk: both were adult birds. The female was rather peculiarly marked, by having about one-third part of each wing extending to the tips, of a pale reddish brown; tips of the tail-feathers of the same colour; a patch of chestnut hue was also visible on the back part of its head, as also a similar patch just above its rump. This is the only instance of variation in the plumage of this species that has passed under my notice. I have frequently observed examples of the green woodpecker (*Picus viridis*) having this reddish brown or rusty hue on the tips of the wings and tail: an example of this variety I have now in my possession, obtained for me by a friend near Wymondham, two or three years since. What cause may be assigned for this abnormal change of plumage? Is it due to the weakness of the birds or to old age? Both the above were adult birds.—*T. E. Gunn.*

Singular Death of a Kingfisher.—An adult specimen of the kingfisher was picked up dead on the bank of a stream in this neighbourhood, on the 16th of February last, it having met with its death by the following singular incident:—In attempting to swallow one of its finny captures, a specimen of the "miller's-thumb" (as the fish is familiarly called here), one of the projecting spines of one side of its gill, being extended, caught under the tongue of the bird, and being unable to extricate itself from its unpleasant morsel, fell a victim to its own rapacity. They were both preserved in the position in which they were found by one of our birdstuffers, and are in the possession of a gentleman in this neighbourhood.—*Id.*

Whimbrel at the Kingsbury Reservoir.—It may interest some of the readers of the 'Zoologist' to know that, two days ago, I shot a fine male whimbrel (*Numenius phæopus*) at the Kingsbury Reservoir. It was quite alone, and I searched in vain for another of its species. Length from tip of bill to end of tail 17¼ inches; length of bill 3¼ inches; extent of wings 28½ inches. Both it and a common sandpiper, which I shot at the same time, smell very fishy.—*Charles B. Wharton; Willesden, Middlesex, May* 12, 1866.

Hard Fate of a Woodcock.—Some time ago a flock of woodcocks passed over this town on a dark night, and one of them struck against the vane of one of our churches, and was impaled on the arrow by his neck.—*Arthur Pye Smith; Ipswich.*

Lesser Tern and Black Tern at Weston-super-Mare.—Terns and divers are alw rare visitors to our muddy sea, whose waters are too thick for them to fish in, an was therefore quite a surprise to me this morning to see the lesser tern and black in the fishmonger's shop, in company with some whimbrel. I purchased five exam of each species of tern in full adult plumage. They had been shot near this town day before.—*Murray A. Mathew; Weston-super-Mare, May* 4, 1866.

Black Tern in Somersetshire.—There have been several black terns seen in marsh this year, especially in the neighbourhood of Sedgmoor: I have heard of many as thirty being seen at one time. I saw two specimens at Mrs. Turle's, birdstuffer, at Taunton, on the 14th of April, and two more on the 28th, which la are now in my collection. All four were in full summer plumage, and had been ki on Sedgmoor a few days before I saw them.—*Cecil Smith; Lydeard House, Ma* 1866.

Whiting taken in Mackerel Drift-nets.—On two consecutive nights this wee solitary full-sized whiting has been taken in the mackerel drift-nets close up to the co The oldest fisherman in the Bay does not recollect such an occurrence before. shows that, for some reason or other, whiting sometimes swim close to the surfac *Thomas Cornish; Penzance, April* 21, 1866.

Tadpole Fish in Mount's Bay.—I had brought to me last week a specimen of trifurcated halle or tadpole fish, of which I noted the occurrence of three specimen the Bay in 1864. This specimen was a small one, 6¾ inches over all. Noticeabl affording presumptive evidence that the fish breeds somewhere in the Bay.—*I* *May* 14, 1866.

Habits of the Common Crab (Carcinas mænas).—I have only just observed interesting note by Mr. Parfitt, in your January number (S. S. 8), on the longevit the Carcinas mænas when kept out of water. I can add something on the subjec its habits. On the 3rd of March, 1862, I was present when the River Stour ab Julian's Bridge, at Wimborne, Dorsetshire, was netted. The water fished was tw miles above all tidal influence, and between it and the sea were four complete w and two rolling bays. There was no salt water nearer than Poole Harbour, whic distant four or five miles at least in the straight line. I then saw caught, and my removed from the net, an adult specimen of Carcinas mænas. I carried it in pocket, wrapped up in a glove, for about two hours, and then placed it in cotton-w in an ordinary chip-box, with some cray-fish caught at the same time, and I sent lot by post to the late Mr. R. Q. Couch, of this place. He received them twenty- hours after their capture, and about twenty-four hours after they had been wrappe cotton-wool. The two cray-fish were dead, but the Carcinas mænas was alive, a recognizing the species, but never dreaming that it came from fresh water, he at o plunged it into his salt-water vivarium, where it very shortly died. I noted these fa to the 'Field,' in my annual fish list, published on the 7th of March, 1863, a curiously enough found my statement challenged, on the authority of somethi Mr. Couch had written previously to the occurrence of the incident above named. *Thomas Cornish.*

DICTIONARY OF BRITISH BIRDS.

(*Continued from page* 2.)

3. Observation and discovery are incessantly at work: it is no more possible for our knowledge to remain stationary than for this earth to discontinue its rotation; hence the additions which Colonel Montagu found it necessary to make between 1802, the date of the 'Dictionary,' and 1813, the date of the 'Supplement': these additions, now incorporated, exceed the original work in bulk. In 1833 Mr. Selby published his 'Illustrations of British Ornithology,' and in this work twenty-four species unknown to Colonel Montagu were described. In 1843 Mr. Yarrell published the first edition of his 'History of British Birds'; in 1846 a second edition, and in 1856 a third and final edition; in these three editions that amiable and most painstaking author added, from various sources, no less than fifty species. The 'Zoologist' has added seventeen species to those mentioned by Montagu, Selby and Yarrell: and here it is but fair to those gentlemen who have made their discoveries known through the medium of that journal, to state that many of Yarrell's species were first published in the 'Zoologist,' and thence transferred to the 'History,' but I give the credit of such additions to the latter work, on account of its systematic character. From these three sources are derived the whole of my editorial additions, which are invariably inserted between brackets, and thus clearly distinguished from the original text. The descriptions of these added species are extracted from the works of Temminck, Selby and Yarrell, are marked by inverted commas, and accompanied by a reference to the volume and page.

4. Immediately after the name I have inserted a reference to a figure of the *bird* and a figure of the *egg*: these references are added both to the original and the new descriptions. For this purpose I have selected Yarrell's 'History of British Birds' and Hewitson's 'Oology,' works which are at present—and for the next half century will certainly continue—our standard authorities: these interpolations are also enclosed in editorial brackets: the Dictionary thus forms a complete Index to both the 'History' and 'Oology'—an Index that was greatly needed, more especially in the case of the 'Oology.'

EDWARD NEWMAN.

9, Devonshire Street, Bishopsgate,
May 30, 1866.

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